

LISTING OF THE CLAIMS

The claims are listed purely for the convenience of the Examiner. No claims have been amended, canceled, or added from the Rule 111 Reply filed on March 24, 2004.

1. (Original) An image projection apparatus, comprising:
 - a light source for emitting light containing different color components;
 - a sequential color selecting means for sequentially passing different color components of the light from said light source;
 - means for generating white light;
 - a spatial light modulator;
 - means for guiding the light having passed through the sequential color selecting means and said white light to said spatial light modulator; and
 - means for adjusting the temporal average intensity of the white light;
- wherein said spatial light modulator spatially modulates the light having passed through the sequential color selecting means and the white light with its temporal average intensity having been adjusted, to generate image light.

2. (Original) The image projection apparatus as set forth in claim 1, wherein said means for adjusting the temporal average intensity of the white light includes a liquid crystal shutter.

3. (Previously presented) The image projection apparatus as set forth in claim 1, wherein said means for generating the white light includes means for combining the light reflected at the sequential color selecting means and the light having passed through the sequential color selecting means.

4. (Original) The image projection apparatus as set forth in claim 3, wherein said means for adjusting the temporal average intensity of the white light adjusts the light reflected at the sequential color selecting means, to thereby adjust the temporal average intensity of the white light indirectly.

5. (Original) The image projection apparatus as set forth in claim 3, wherein said sequential color selecting means has a plurality of color filters, which are formed of dichroic filters, and the light reflected at an incident surface of the sequential

color selecting means is guided to an exit surface of the sequential color selecting means so that it is combined with the light having passed through the sequential color selecting means.

6. (Previously presented) The image projection apparatus as set forth in claim 1, wherein said sequential color selecting means includes a plate member held rotatably about an axis of rotation, said plate member is divided into three or more regions by lines extending in radial directions from the axis of rotation, and at least three of the regions have color filters of three primary colors of red, green and blue.

7. (Original) The image projection apparatus as set forth in claim 1, wherein said spatial light modulator comprises a digital micromirror device.

8. (Original) The image projection apparatus as set forth in claim 1, further including a controller for adjusting the temporal average intensity depending on the contents of an image signal representing the image to be projected.

9. (Previously presented) An image projection apparatus, comprising:

a light source for emitting light containing different color components;

a sequential color selecting means for sequentially passing different color components of the light from said light source;

a spatial light modulator;

means for guiding the light having passed through the sequential color selecting means and light reflected at said sequential color selecting means to said spatial light modulator; and

adjusting means which reduce the temporal average intensity of the reflected light;

wherein said spatial light modulator spatially modulates simultaneously the light having passed through the sequential color selecting means and the reflected light with its temporal average intensity having been adjusted, to generate image light.

10. (Previously presented) The image projection apparatus as set forth in claim 9, wherein a rate of reduction by the adjusting means is variable.

11. (Previously presented) An image projection apparatus, comprising:

a light source for emitting an initial light of a plurality of color components;

a sequential color selector configured to allow one or more color components of the initial light to pass through as a passed-thru light and to reflect remaining color components as a reflected light;

a light intensity adjuster configured to dynamically adjust an intensity of the reflected light as an intensity adjusted light; and

a spatial light modulator configured to spatially modulate the passed-thru light and the intensity adjusted light to generate an image light.

12. (Previously presented) The image projection apparatus as set forth in claim 11, further including a controller configured to provide a control signal such that said light intensity adjuster adjusts the intensity of the intensity adjusted light based on the control signal.

13. (Previously presented) The image projection apparatus as set forth in claim 12, wherein the control signal is based a content of an image signal representing an image to be projected.

14. (Previously presented) The image projection apparatus as set forth in claim 12, wherein said controller is configured to provide signals to synchronize operations of said sequential color selector, said light intensity adjuster, and spatial light modulator with each other.

15. (Previously presented) The image projection apparatus as set forth in claim 14, wherein said light intensity adjuster is configured to adjust the intensity of the intensity adjusted light in one or both of duration and attenuation level.

16. (Previously presented) The image projection apparatus as set forth in claim 15, wherein said light intensity adjuster includes a light shutter.

17. (Previously presented) The image projection apparatus as set forth in claim 16, wherein the passed-thru light includes only a single color component.

18. (Previously presented) The image projection apparatus as set forth in claim 17, wherein the passed-thru light includes one of red, blue, and green color components and the reflected light includes the other two color components.

19. (Previously presented) The image projection apparatus as set forth in claim 11, wherein said sequential color selector is held rotatably about an axis of rotation, wherein said sequential color selector is divided into at least three color regions extending in a radial direction from the axis of rotation.

20. (Previously presented) The image projection apparatus as set forth in claim 19, further including a first light converging device configured to converge the initial light from said light source substantially in a first direction toward an incident surface of said sequential color selector, wherein the

axis of rotation of said sequential color selector is inclined at a predetermined angle θ with respect to the first direction such that the reflected light is reflected from said incident surface of said sequential color selector.

21. (Previously presented) The image projection apparatus as set forth in claim 20, further including a light guide optically placed between said sequential light selector and said light intensity adjuster to guide the reflected light to said light intensity adjuster.

22. (Previously presented) The image projection apparatus as set forth in claim 21, further including a light collimator optically placed between said sequential light selector and said light guide, wherein said light collimator is configured to collimate the reflected light into a collimated light with a predetermined cross section size prior to being guided by said light guide.

23. (Previously presented) The image projection apparatus as set forth in claim 21, further including one or more light

guides optically placed between said light intensity adjuster and said sequential color selector to guide the intensity adjusted light to an exit surface of said sequential color selector upon which the intensity adjusted light is reflected such that both the intensity adjusted light and the passed-thru light exiting said exit surface are directed toward said spatial light modulator.

24. (Previously presented) The image projection apparatus as set forth in claim 23, further including a light collimator optically placed between last of said one or more light guides and said sequential color selector, wherein said light collimator is configured to collimate the intensity adjusted light into a collimated light to be incident on said exit surface of said sequential color selector.

25. (Previously presented) The image projection apparatus as set forth in claim 23, further including a second light converging device configured to converge the passed-thru light and the intensity adjusted light to said special light modulator.

26. (Previously presented) The image projection apparatus as set forth in claim 25, wherein said sequential color selector is divided into three color regions.

27. (Previously presented) The image projection apparatus as set forth in claim 26, wherein the passed-thru light includes one of red, blue, and green color components and the reflected light includes the other two color components.

28. (Previously presented) The image projection apparatus as set forth in claim 27, wherein said light intensity adjuster is configured to adjust the intensity of the intensity adjusted light in one or both of duration and attenuation level.

29. (Previously presented) An image projection apparatus, comprising:

a first light source for emitting an first light of a plurality of color components;

a sequential color selector configured to allow one or more color components of the first light to pass through as a passed-thru light;

a second light source for emitting a second light of a plurality of color components;

a light intensity adjuster configured to dynamically adjust an intensity of the second light as an intensity adjusted light; and

a spatial light modulator configured to spatially modulate the passed-thru light and the intensity adjusted light to generate an image light.

30. (Previously presented) The image projection apparatus as set forth in claim 29, further including a controller configured to provide a control signal such that said light intensity adjuster adjusts the intensity of the intensity adjusted light based on the control signal.

31. (Previously presented) The image projection apparatus as set forth in claim 30, wherein the control signal is based a content of an image signal representing an image to be projected.

32. (Previously presented) The image projection apparatus as set forth in claim 30, wherein said controller is configured

to provide signals to synchronize operations of said sequential color selector, said light intensity adjuster, and spatial light modulator with each other.

33. (Previously presented) The image projection apparatus as set forth in claim 32, wherein said light intensity adjuster is configured to adjust the intensity of the intensity adjusted light in one or both of duration and attenuation level.

34. (Previously presented) The image projection apparatus as set forth in claim 33, wherein the passed-thru light includes only a single color component.

35. (Previously presented) The image projection apparatus as set forth in claim 34, further including a light combiner optically placed between said sequential color selector and said spatial light modulator and between said light intensity adjuster and said spatial light modulator, said light combiner configured to combine the passed-thru light and the intensity adjusted light direct the combined light to said spatial light modulator.

36. (Previously presented) The image projection apparatus as set forth in claim 35, wherein said light combiner includes a prism such that the passed-thru light entering a first entrance surface of said prism exits an exit surface and the intensity adjust light entering a second entrance surface exits said exit surface.

37. (Previously presented) The image projection apparatus as set forth in claim 36, wherein said light combiner further includes a light guide optically placed between said light intensity adjuster and said prism, said light guide is configured to guide intensity adjusted light from said light intensity adjuster to said second entrance surface of said prism.

38. (Previously presented) The image projection apparatus as set forth in claim 36, wherein said sequential color selector is divided into three color regions.

U.S. Application No. 09/933,198

Docket No. 1190-0508P

August 12, 2004

Art Unit: 2614

Page 15 of 26

39. (Previously presented) The image projection apparatus as set forth in claim 38, wherein the passed-thru light includes one of red, blue, and green color components.